Subsurface Oil Assessment Operations

On-Water Operations Branch

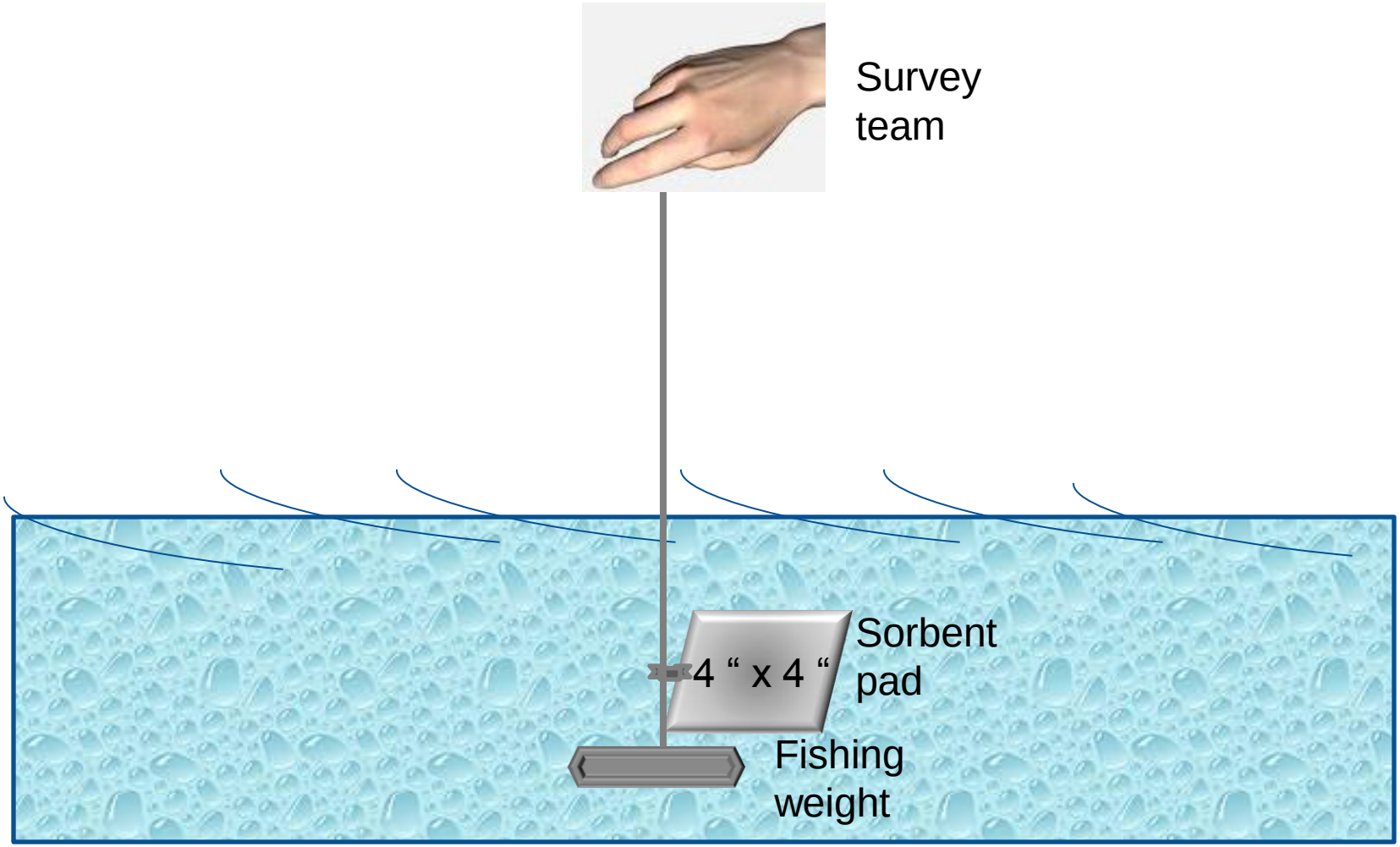
Incident Command Post Mobile, Alabama

Deepwater Horizon (MC252)

Six initial methods of assessment

- Sorbent drops
- Water quality sampling
- Bottom sediment sampling
- Subsurface “Sentinels”
- Fluorometer transects
- VIPERS initiative trawl drags

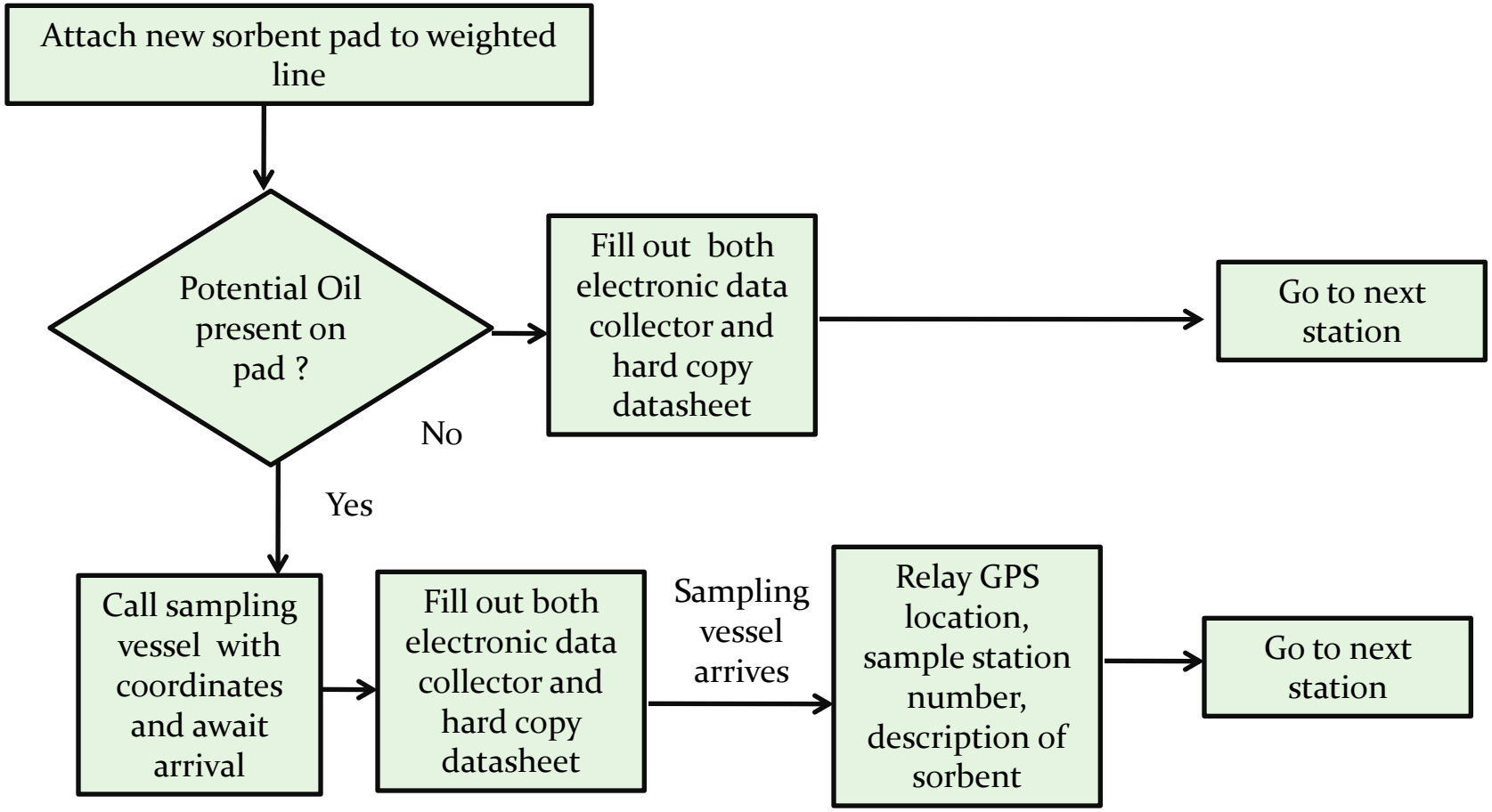
Sorbent drops



Sorbent drops cont'd

- Conducted by VOO in MS and AL portions of Mississippi Sound
- Sorbent pad attached to a weighted line
- USCG or MSNG riders onboard for data collection & monitoring
- Entire Sound will be surveyed systematically in 2 x 2 square mile grid squares
- Sampling vessels will relay any findings of suspected oil to 1 of 7 sampling vessels
  - Sampling vessels with qualified technicians respond to collect samples for confirmation & analysis

Sorbent drop procedure



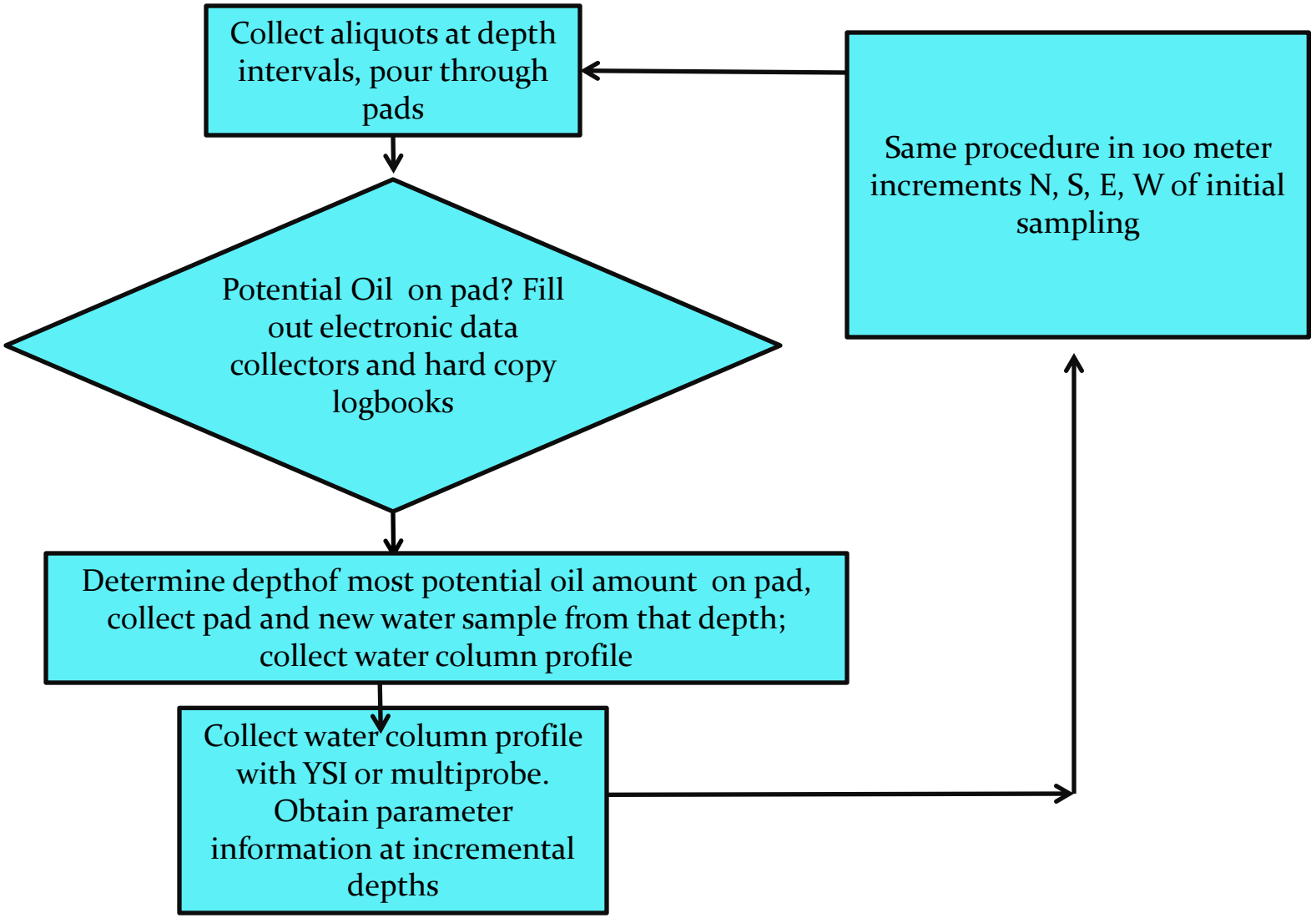
Water quality sampling

- VOO and MSDEQ vessels will carry environmental teams who will take all samples
- Samples for suite of water quality indicators at various depths
  - Kemmerer Bottles
  - Electronic WQ monitoring equipment

Water quality sampling cont'd

- Sampling bottle (Kemmerer Bottle) lowered to collect small amount of water
- Strained through sorbent pad
- If results suggest sample may contain oil or benthic oily product, it will be collected for laboratory analysis
  - 24 hrs for oil confirmation
  - 7-14 day turnaround for MC252 fingerprinting

Sampling follow-up procedure



Bottom sediment sampling

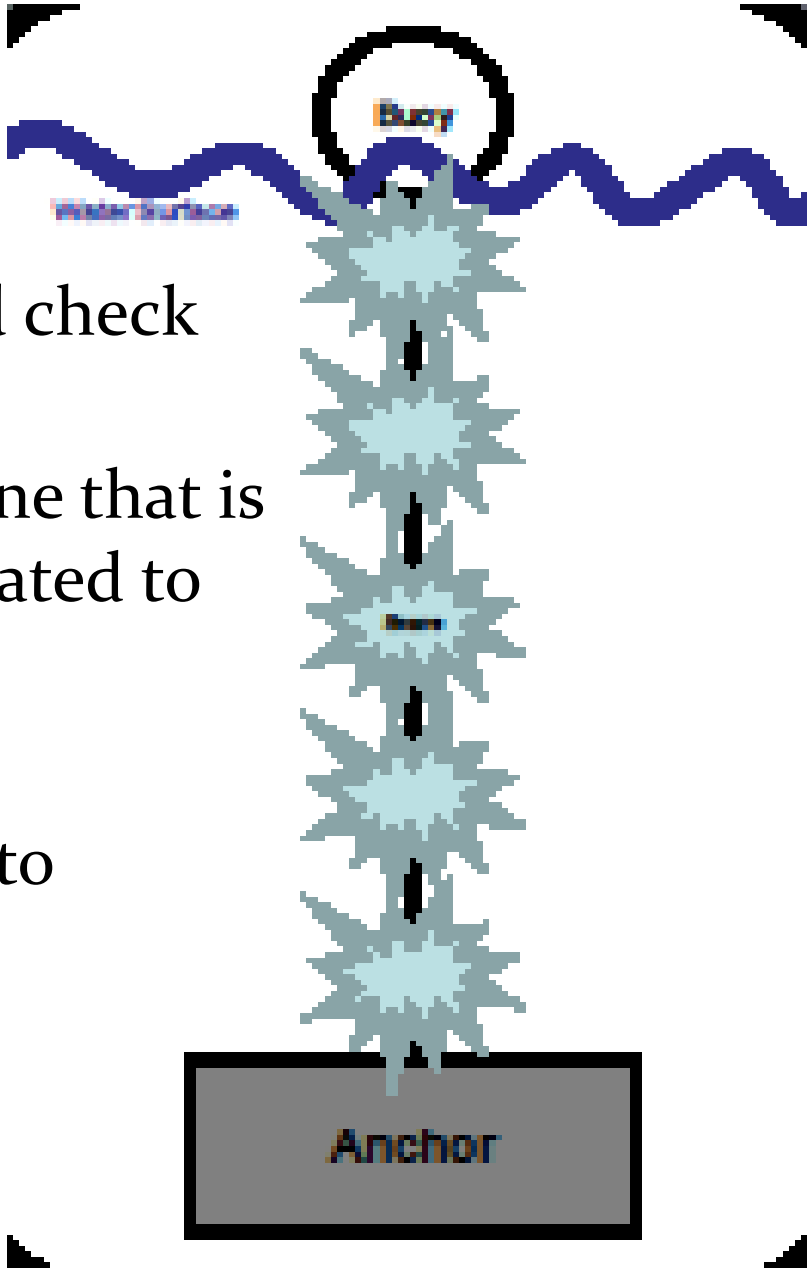
- Several VOO will carry various personnel to conduct sediment sampling at selected sites
- Ponar (grab sampler) will be lowered to the bottom to collect sediment
- Suspected oil/oily waste will be sampled for detailed chemical lab testing

Bottom sampling cont'd

- Two programs for bottom sampling:
  - Two VOO will conduct sediment sampling along transects in the MS Sound
    - Approx. 50 sampling stations selected to achieve geographic and functional representation
  - Coastal Subsurface Assessment Team: Ten VOO will conduct sampling along the AL, MS, and FL coastlines
    - Systematic sampling between 1st and 2nd sandbars
    - Every 500'-600' of linear beachfront, or where visual inspection/sonar indicates possible presence of oil
    - Emphasis on segments of shoreline with frequent re-oiling

Snare Sentinels

- Fleet of 20 VOO will deploy and check sentinels daily
- Sorbent snares strung along a line that is anchored to the bottom and floated to the top
- Deployed in 20-25’ of water
- 148 strung from Cat Island, MS to Panama City, FL.



Snare Sentinels cont'd

- Sentinels will be spaced at 5 mile intervals, with more deployed in some areas
- Areas of higher density determined by
  - consultation with state environmental agencies
  - SCAT reports of frequently re-oiling on adjacent shoreline

Fluorometer transects

- Device emits light at different wavelengths and measures the returned parameters of fluorescence
- Parameters are used to identify the presence and amount of specific chemical compounds in a medium (e.g., oil in water)
- Capable of detecting fluorescent molecule concentrations as low as 1 part per trillion

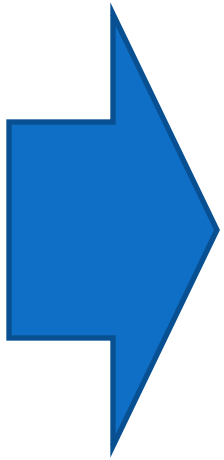
Fluorometer transects cont'd

- Two fluorometers towed along predetermined transects
- One from CTEH; one from Coast Guard Gulf Strike Team
- Devices give a presence/absence reading
  - Yes, oil present, or no, oil not present
- Water samples collected where device indicates possible presence of oil

VIPERS initiative

- 3 specially modified VOO shrimp boats
- Normal shrimp trawl nets lined with finer net mesh to capture any suspended/submerged oil
- 15-minute trawls as required by National Marine Fisheries Service (NMFS)
- “Fast boat” with sampling personnel onboard shadows Strike Team to samples when warranted
- Two observers onboard
  - USCG observer
  - NMFS turtle observer

Six initial methods of assessment



Five initial Strike Teams and Task Forces

Five initial teams

- Mississippi Sound Subsurface Oil Assessment Project
  - Mississippi Subsurface Assessment Team (MSAT)
  - Alabama Subsurface Assessment Team (ASAT)
- Coastal Subsurface Assessment Team (CSAT)
- Sentinel Strike Teams
- VIPERS Teams
- Expansion:
  - Florida Subsurface Assessment Team (FSAT)
  - Snorkel SCAT

Operations Section

On-Water Operations Branch

LT J. Collins/BMC M. Boivin

Subsurface Oil Assessment Group

MS Sound Subsurface Assessment Project (MSAP)

CWO Andrew Matthews

60 vessels: 4 VOO; 6 MSDEQ skimmers; 10 additional VOO in MS for supplementary tasking

Mississippi Subsurface Assessment Team (MSAT)

LCDR R. Negron/LCDR K. Jaekel (MS Branch/IMT Biloxi)

Seahorse (IMT Biloxi)

- Survey Vessel Strike Team
  - 28 VOO w/USCG or MSNG observer
  - Sorbent pad drops
  - Each vessel completes 5 grid squares
- Sampling/ "Chase" Vessel Strike Team
  - 6 MSDEQ skimmers w/MSDEQ sampling personnel
  - Respond to reports of potential subsurface oil as ID'd by Sur Vsls
  - Conduct water quality sampling at position identified by Survey Vessel
  - Conduct sampling for confirmation (approx. 24 hour turnaround)
  - Conduct sampling for fingerprinting/ ID as MC252 product (7-14 day turnaround)
- Fluorometer & Sediment Sampling Task Force
  - 2 VOO w/CTEH sampling personnel
  - One vessel conducts fluorometer transect through designated route
  - One vessel conducts sediment sampling (Ponar grabs) at predetermined sampling points throughout MS Sound

Alabama Subsurface Assessment Team (ASAT)

MUC McCormick
lmmccormick@sbcglobal.net
(860) 389-5162

- Survey Vessel Strike Team
  - 10 VOO w/USCG observer
  - Sorbent pad drops
  - Each vessel completes 5 grid squares
- Sampling/ "Chase" Vessel Strike Team
  - 1 VOO w/qual'd CTEH sampling personnel
  - Respond to reports of potential subsurface oil as identified by Survey Vessels
  - Conduct water quality sampling at position identified by Survey Vessel
  - Conduct sampling for confirmation (approx. 24 hour turnaround)
  - Conduct sampling for fingerprinting/ ID as MC252 product (7-14 day turnaround)
- Fluorometer & Sediment Sampling Task Force
  - 2 VOO w/CTEH sampling personnel
  - One vessel conducts fluorometer transect through designated route
  - One vessel conducts sediment sampling (Ponar grabs) at predetermined sampling points throughout MS Sound

Supplementary Response Team

16 additional VOO staged out of 4 sites

Supplementary tasking from MS Branch, not to interfere with execution of MS Sound SAP

Vessels with Intrinsic Petroleum Recovering Systems (VIPERS)

Billy Michalopoulous
(251) 463-8334

VIPERS Strike Team

3 VOO (60-80 foot specially equipped shrimp boats), each w/USCG shiprider and NMFS turtle observer

Conduct transects in near-coastal waters 3-5 NM offshore; entire coastline

Follow-up by "fast boat" to conduct environmental sampling where required

Coastal Subsurface Assessment Teams

10 VOO w/USCG observer & environmental sampling team

3 Strike Teams by state

Conduct sampling of sediment between 1st and 2nd sandbars off MS, AL, and FL coastlines

Samples every 500'-600' or as potential oil is identified

Emphasis on segments with frequent re-oiling

- CSAT I (MS): 2 VOO
- CSAT II (AL): 3 VOO
- CSAT III (FL): 5 VOO

Sentinel Strike Teams

20 VOO w/USCG observer

3 Strike Teams by state

Deploy & maintain 148 sentinels off entire MS, AL, and northwest FL coastlines

Deployed every 5 miles or more frequently as requested by states

- SST I (MS): 4 VOO
- SST II (AL): 6 VOO
- SST III (FL): 10 VOO

Mississippi Subsurface Assessment Team

- MS state waters as bounded by barrier islands
- 32 VOO
  - Survey vessels (sorbent drops) working on grid
  - 1 fluorometer survey vessel - transect
  - 1 sediment (Ponar) survey vessel - transect
- 6 MSDEQ skimmers used as sampling vessels
  - Respond to survey vessel reports to conduct Kemmerer Bottle pours and WQ testing
- 16 supplementary vessels will augment program
- USCG or MSNG shipriders

Alabama Subsurface Assessment Team

- Alabama portion of MS Sound from state line to Dauphin Island Bridge
- 12VOO
  - Survey vessels (sorbent drops) working on grid
  - 1 fluorometer survey vessel - transect
  - 1 sediment (Ponar) survey vessel – transect

Coastal Subsurface Assessment Team

- Will sample for sunken and submerged oil between 1st and 2nd sandbars off MS, AL, and FL coastlines
  - NOAA experience suggests oil from offshore spills may concentrate in this subtidal area and act as a reservoir of oil that is then beached
- Ponar sampling every 500'-600' off shoreline
  - WQ sampling as needed
- Emphasis on segments prone to frequent re-oiling
- 10 VOO working in 3 Strike Teams by state
- Trained sampling teams from CTEH & USCG observer

Sentinel Strike Teams

- Will deploy and maintain 148 sentinels off MS, AL, and FL coastlines
  - 20'-25' water depth, seaward of 2nd sandbar as identified by VOO operator
  - Deployment & daily checks of each sentinel for 2 weeks
  - Spaced at least every 5 miles, higher density where requested by states
- 20 VOO in 3 Strike Teams by state

VIPERS Strike Team

- 3 VIPER VOO operating as a Strike Team
- Will cover entire coastline at distance of 3-5 NM offshore
- USCG and NFMS turtle observers